



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,119	01/17/2002	Minghui Hong	2826-9	8997

7590 10/04/2004

NIXON & VANDERHYE P.C.
8th Floor
1100 North Glebe Rd.
Arlington, VA 22201-4714

EXAMINER

EVANS, GEOFFREY S

ART UNIT	PAPER NUMBER
----------	--------------

1725

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/047,119

Applicant(s)

HONG ET AL.

Examiner

Geoffrey S Evans

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 20 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6-11, 14-19 and 23-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-11, 14-19 and 23-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20040729.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,2,6,7,9,10,14,15-18,22,23,25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egitto et al. in U.S. Patent No. 6,509,546 B1 in view of Taura et al. in Japan Patent No. 2-220,793 and Shigeru et al. in Japan Patent No. 8-10,970. Egitto discloses providing a laterally disposed multi-layered substrate, focusing a first laser beam and effecting relative lateral movement between the substrate and the focus point to cut the substrate. Egitto does not teach using a second laser beam focused at a second focus to cut the substrate nor does Egitto et al. disclose that further laser beams are provided, the number of laser beams corresponding to the number of separate layers to be removed. Taura et al. teaches cutting a thick workpiece by using two laser beams made from a single laser beam by a using a beam splitter (element 22 in figure 1) to deliver the laser beam at different focus points. Shigreu teaches using a further laser beam to cut a further layer of material, with the number of laser beams (3) corresponding to three separate layers (10A, 10B, 10C), each laser beam having a wavelength and power level (e.g. see paragraph 12) to optimally cut that layer of the composite material. Shigeru et al. further teaches using different wavelengths (e.g. see paragraph 58 where wavelengths of 249 nm and 193 nm are disclosed for lasers sources 11a and 11b). It would have been obvious to adapt Egitto et al. in view of

Taura et al. and Shigeru et al. to optimize cutting of a workpiece with multiple layers of different materials by using a different laser beam that is optimized in wavelength and focus for cutting each particular layer.

3. Claims 3, 11, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egitto et al. in view of Taura et al. and Shigeru et al. as applied to claims 1, 9, and 22 above, and further in view of Barnekov et al. in U.S. Patent No. 5,578,229. Barnekov et al. teaches irradiating the second laser beam on a second lateral surface of the substrate. It would have been obvious to adapt Egitto et al. in view of Taura et al., Shigeru et al. and Barnekov et al. to provide this to prevent interference with the kerf created by the first laser beam and to reduce the path of debris each laser beam must pass through (see column 2, lines 28-30 of Barnekov et al.).

4. Claims 8, 19, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egitto et al. in view of Taura et al., Shigeru et al. as applied to claim 1, 9, and 22 above, and further in view of Kasner et al. in U.S. Patent No. 4,789,770. Kasner et al. teaches using optical sensors to monitor the process and a control means (the computer in Kasner et al. is a functional equivalent of the control means of the instant application; see column 8, lines 39-44 of Kasner et al.) to control the cutting process in response to optical monitoring. It would have been obvious to adapt Egitto et al. in view of Taura et al., Shigeru et al., and Kasner et al. to provide this to control the cutting process so that the correct laser beam is used to cut the correct layer.

5. Claims 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egitto et al. in view of Taura et al., Shigeru et al. as applied to claims 1, 9, and 22 above,

and further in view of Leong et al. in U.S. Patent No. 5,611,946. Leong et al. teaches using a single laser source to create multiple wavelengths by using nonlinear crystals (e.g. see column 6, line 49 to column 7, line 11). It would have been obvious to adapt Egitto et al. in view of Taura et al., Shigeru et al., and Leong et al. to provide this to minimize the number of individual laser sources required.

6. Applicant's arguments filed 20 July 2004 have been fully considered but they are not persuasive. Shigeru et al. teaches using laser sources having different wavelengths for cutting (see paragraph 58).

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

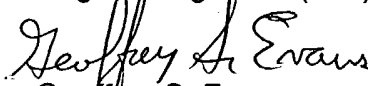
Art Unit: 1725

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See the enclosed computer translation of Shigeru (Japan Patent No. 8-010,970) that was obtained from the Japan Patent office web site (see <http://www.ipdl.ncipi.go.jp>), no publication date. Chu et al. in Japan Patent document no. 2001-77,506 A discloses laser cutting using two laser beams of different wavelengths. So et al. in Japan Patent No. 10-314,972 laser machines a printed circuit board from two sides.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey S Evans whose telephone number is (571)-272-1174. The examiner can normally be reached on Mon-Fri 6:30AM to 4:00 PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571)-272-1171. The fax phone number for the organization where this application or proceeding is assigned is (703)-872-9306.

GSE


Geoffrey S. Evans
Primary Examiner
Group 1700